A PHENOMENAL DRIFT OF SEAWEED IN FALSE BAY.

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The drift of seaweed on South African coasts has hitherto received little or no attention. No scientific observations as to its composition, bulk or seasonal nature have been made, nor has there been any attempt to utilise the masses of seaweed thrown up on our shores, although in many other parts of the world seaweed is regarded as a valuable fertilizer for arable land and the drift is eagerly sought by the local farming community.

Normally the amount thrown up on the beaches of the Peninsula is not very great, but every now and then, most often about the time of one of the equinoctial spring tides, a great mass of seaweed is cast up, covering the beach with a thick layer of weed. This is left to rot on the beach, or if so great that the rotting mass becomes offensive, is carted away by the Municipality and buried. Hitherto this has happened perhaps once or twice a year in Table Bay on the stretch of Woodstock beach lying between Misplon's boat-building sheds and the end of the esplanade, while in False Bay a similar drift (though differently constituted) occurs occasionally on the Muizenberg beach between the station and the Pavilion, and also to some extent at Strandfontein.

Towards the end of March of this year paragraphs began to appear in the daily press concerning a drift of "green seaweed" which first made itself evident on the beach east of Simonstown. Thence it progressed first to Glencairn, then to Fish Hoek, and on to Muizenberg, obviously following the drift which sets in round the western shores of the bay and moves on first eastward and then southwards towards Cape Hangklip. Unfortunately the last week in March, when these notices in the daily papers began to appear, was a particularly busy one and no examination of the seaweed was made. On the morning of Sunday, April 2nd, however, a visit was paid to Muizenberg to see what exactly was being cast up, the Press description of "green weed and sea-grass" being obviously inadequate, if not inaccurate. This morning proved to

be the climax of the drift which was quite phenomenal, and larger than any remembered to have occurred on that beach for very many years. From the rocks below the station to about the middle of the pavilion the beach was covered, in parts to a depth of nearly three feet, with a continuous mass of seaweed : the sea was discoloured with it far out into the breakers and each wave of the in-coming tide brought in a fresh mass of seaweed. The first April spring tide was approaching and the previous tides had been high ones so, not only did the drift cover the beach in front of the first row of bathing boxes, but it extended under them, finally ending against the banked-up sand between the two rows of boxes.

The constitution of the drift was interesting. The great bulk of it consisted of a green seaweed, a species of *Ulva*, possibly *Ulva lactuca*, thin in consistency and very fragmentary, full of holes where it had been eaten away by small gastropods, but nevertheless very resistant and lasting a long time in water. It was this seaweed which gave the dominant green colour to the mass of drift-weed, but mixed with it were many other seaweeds, not only green but also brown and red, one of the latter, *Nemastoma lanceolata*, being particularly abundant and forming vivid scarlet patches in the green mass. This, a deep water form which is usually a comparatively rare find among drift-weed, was easily the most striking constituent of the drift. It is occasionally found cast up not only in False and Table Bays, but also along the west coast, for instance, at Melkbosch, Kommetje and Maclear's Beach ; here, however, there were hundreds of plants of all sizes, up to ribbon-shaped fronds a metre and a half in length by ten to twelve centimetres or more broad, while other plants consisted of two to four fronds arising palmately from a broad somewhat triangular base.

Among the green seaweeds were no less than five species of *Codium*, the most abundant and conspicuous being the large *Codium Lindenbergii*, much of it furred with red patches of a small epiphytic alga, a species of *Rhodochorton*, while other fronds were covered with another red epiphyte, *Placophora*. The curious and fascinating *Codium Bursa* was also well represented.

Brown seaweeds were not abundant ; although here and there one was found, no species was present in any quantity. Perhaps the least rare was *Dictyota naevosa*.

Among the reds, after *Nemastoma* the most abundant were various species of *Plocamium*, the most outstanding being *P. corallorhiza* and a very beautiful species, possibly *P. nobile*. *Delisea Suhrii*, very rarely found in False Bay, also occurred, and *Chondrococcus* also was present in some quantity.

A list of the species noted is appended, but it must be emphasised that this is by no means exhaustive—a more thorough examination of the drift than was possible in the time available would undoubtedly have yielded many more species. Many of the forms mentioned were collected as one or two specimens only while others were present in large numbers, and still others again were for one reason or another not collected at all and may have been omitted from the list. Where possible, the relative abundance of each species is indicated ; if no remark is made the species, though present, was not seen in any great quantity.

In addition to the seaweed, the mass of drift included quantities of animal remains which perhaps serve to indicate, even more than the plants, the strength of the ground swell or other disturbance which had torn the mass of attached weed from the sea bottom—various kinds of fish, including "Sucker" fish (*Chorisochismus dentex*), Klipfish (*Clinus superciliosus*), such as are caught on the submerged reefs off shore, young Skates (*Raia* sp.), Skate- and Shark-eggs, masses of *Sepia* eggs, Red Bait, Polyzoa, Sponges, a compound Aecidian on *Epymenia*, Mussels (*Mytelus*), *Patella compressa*, etc.

So thick was the drift that municipal employees were busy clearing paths to give access to the bathing boxes, and carting masses away. The following day, in spite of this continued removal of drift there was still a thick covering of weed on the beach and it had moved along, at midday extending beyond the pavilion. By Tuesday evening there were large patches of weed beyond the pavilion below the esplanade while from the pavilion to the station steps the beach was white once more with only occasional patches of drift-weed, but the level had risen—the remains of the seaweed being buried under a covering of sand washed up by the spring tide. Beneath this cover of sand must have been a considerable mass of decaying seaweed, judging from the smell and from the fact that on walking across the beach, one sank in in places above the ankles, and this despite the continual carting away of great masses of seaweed throughout Sunday, Monday and Tuesday morning.

The origin of the drift weed would appear to be local, in great part if not entirely, since all the species noted have been recorded for False Bay, although some are rare in this locality. The previous week there had been an unusually violent South-easter (unusual for this time of year), reaching 60 miles per hour with occasional gusts rising to 80 miles per hour. It had lasted for two days and was then followed by light North-westerly winds. It seems possible that this, possibly coupled with some other factors, had caused a strong ground swell resulting in considerable disturbance in the shallow waters of False Bay and thus giving rise to this spectacular drift of seaweed. What the contributory factors

may be, whether a seasonal condition of the plant growth in this locality or purely climatic awaits investigation.*

Seaweeds Noted in the Drift.

CHLOROPHYCEAE.

Ulva ?lactuca L.	Very abundant.
Codium Lindenbergii Bind.	Abundant.
,, Stephensiae Dick	
,, Bursa Ag.	
,, Duthiae Setch.	
,, fragile (Suring) Hariot	
Bryopsis myosuroides Kütz.	
Caulerpa ligulata Harv.	

PHAEOPHYCEAE.

Ecklonia buccinalis (L) Hornem.	
Sargassum longifolium (Turn.) Ag.	
Dictyota dichotoma (Huds.) Lamour.	
,, naevosa (Suhr) J.Ag.	
Zonaria interrupta (Lamour.) J.Ag.	

RHODOPHYCEAE.

Scinaia ?salicornioides (Kütz.) J.Ag.	Rare.
Chaetangium ornatum (L) Kütz.	
Gelidium cartilagineum (L) Gaill.	
,, pristoides (Turn.) Kütz.	
Suhria vitata (L) J.Ag. (On Patella compressa.)	
Iridophycus capensis (J.Ag.) Setch.	
Gigartina radula (Esp.) J.Ag.	
,, stiriata (Turn.) J.Ag.	
,, sp. nov. (From Strandfontein).	
Gymnogongrus vermicularis (Turn.) J.Ag.	
Callymenia schizophylla (Harv.) J.Ag.	Fairly common.
,, Harveyana J.Ag.	,, ,,
Rhodophyllis capensis Kütz.	Common.
Hypnea spicifera (Suhr) Harv.	
,, sp.	
Epymenia obtusa (Grev.) Kütz.	
Champia compressa Harv.	Fairly abundant.

*Since this drift, there have been several recurrences, though on a smaller scale, of drift on the False Bay beaches, each time at a spring tide, e.g., Fish Hoek, 16-19 June 1939; from Glencairn to Muizenberg, 21-27 July 1939. In each case, while the same species of Ulva formed the bulk of the seaweed cast up, there was considerable variation as regards the other species present; for instance, Nemastoma, so common at Muizenberg, was entirely absent from the June drift at Fish Hoek.

Plocamium corallorhiza (Turn.) Harv.	Abundant.
,, cornutum (Turn.) Harv.	Fairly common.
,, rigidum Bory.	,, ,,
,, coccineum (Huds.) Lyngb.	,, ,,
,, ?nobile J.Ag.	,, ,,
Hymenena venosa (L) Kylin	,, ,,
Neuroglossum Binderiana Kütz.	
Apoglossum sp.	
Delisea Suhrii J.Ag.	
Laurencia flexuosa Kütz.	
Polysiphonia virgata (Ag.) Spreng.	
Tayloriella tenebrosa (Harv.) Setch.	
Pterosiphonia cloiophylla (Ag.) Falkenb.	Common.
Placophora Binderi J.Ag. (On Codium spp.)	
Rhodochorton sp. (On Codium Lindenbergii.)	
Dasya scoparia Harv.	
Heterosiphonia dubia (Suhr) Falkenb.	
Pleonosporium Harveyanum J.Ag.	
,, purpuriferum (J.Ag.) De Toni	
Ceramium obsoletum Ag.	
,, sp.	
,, sp.	
Centroceras clavulata Mont.	
Grateloupia longifolia Kylin	Occasional.
Nemastoma lanceolata (Harv.) J.Ag.	Very abundant.
Chondrococcus Lambertii (Suhr) Kütz.	Abundant.